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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/016,439	12/11/2001	Todd P. Lukanc	039153-0447 (G1152)	5257
7590	03/03/2004		EXAMINER BARRECA, NICOLE M	
Paul S. Hunter FOLEY & LARDNER Firststar Center 777 East Wisconsin Avenue Milwaukee, WI 53202-5367			ART UNIT 1756	PAPER NUMBER
DATE MAILED: 03/03/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/016,439

Applicant(s)

LUKANC ET AL.

Examiner

Nicole M. Barreca

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 21 and 22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/3/2003
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. Applicant's election of Group I, claims 1-20 in the Paper No. 1/8/2004 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 21-22 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 1/8/2004.

### *Information Disclosure Statement*

3. The IDS submitted on 11/3/2003 has been considered. A2 was crossed off in order to avoid duplicates listings. A21 was cross off so the application would not be published.

### *Response to Amendment*

4. The objection to the specification is withdrawn in response to the applicant's amendments.
5. Applicant's arguments, see p.7-11, filed 1/8/2004, with respect to the rejection(s) of claim(s) 1-9 and 16-20 under Liebmann and Ludwig have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ludwig. The new and modified rejection in view of Ludwig is found below.
6. Liebmann and Ludwig do not disclose a boundary region which is **around** the defined edges of the phase regions. However please note that claim 10 only recites

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constructing a boundary region outside of the phase regions and does not require that the boundary region be around the phase regions. Therefore the previous rejection of claims 10-15 under Ludwig still remains.

***Priority***

7. An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification or in an application data sheet (37 CFR 1.78(a)(2) and (a)(5)). The specific reference to any prior nonprovisional application must include the relationship (i.e., continuation, divisional, or continuation-in-part) between the applications except when the reference is to a prior application of a CPA assigned the same application number.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Ludwig (US 6,543,045).

10. Ludwig discloses forming a phase shift mask. Critical regions are defined as having a distance between them less than a predefined minimum value. Individual sections of the polygons are assigned phases which have a phase difference of 180°.

Figure 8 illustrates a bright-field mask 200 with non-transparent regions 21. Phase shifting elements 22 (hatched polygons) are determined on each side of non-transparent or critical regions 21. When straight sections of the non-transparent regions 21 end within a phase shifting element 22 an end region 23a is generated. End region 23b is generated at the point where a critical region 21 ends at a critical interaction region. Degenerated critical regions are then defined by removing overlapping regions 23 from non-transparent regions 21. The coherent regions that lie outside the phase-shifting regions and the critical regions are determined, along with the outer borders of the coherent regions, the overlapping regions and the end regions. The number of contact lines between the specific outer borders and the degenerated critical regions is determined and the phase conflict is determined if the number is uneven. The phase conflict is resolved by defining the region borders such as large outer borders 24 of lands, overlapping regions 23 or end regions 23a,b, and obtaining a set of connecting paths between pairs of parallel edges, opposite one another of respective polygons. Large region borders 24 are illustrated in Fig. 11 as surrounding hatched phase regions 22 and therefore correspond to the applicant's boundary regions **around** defined edges of the phase regions. Regions 23 correspond to the applicant's break regions. The set of connecting paths is reduced and coverage regions are formed as region boundaries between two different regions of the phase mask to be manufactured such that the coverage regions have phase shifts with a phase difference of  $180^{\circ}$  degrees. A trim mask may be used for exposing the coverage regions. See col.4, 18-65, col.10,43-col.12, 11, col.15, 8-col.16, 34.

### ***Double Patenting***

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. Claims 1, 6-9 and 16 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3, 7-11 of U.S. Patent No. 6675369. Although the conflicting claims are not identical, they are not patentably distinct from each other because both claim a method for designing a phase-shift mask wherein phase regions are defined proximate to critical regions, assigning phase polarities to the phase regions, defining edges of the phase region, establishing a boundary region around the edges and assigning the boundary region to a (first) phase angle, such as zero.

13. Claims 1, 6-9 and 16 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3, 9-11 of copending Application No. 10/016273. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim a method for designing a phase-shift mask wherein phase regions are defined proximate to critical

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regions, assigning phase polarities to the phase regions, defining edges of the phase region, establishing a boundary region around the edges and assigning the boundary region to a (first) phase angle, such as zero.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Response to Arguments***

14. Applicant's arguments with respect to claims 1-6 and 16-20 have been considered but are moot in view of the new ground(s) of rejection.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicole M. Barreca whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday (8:00 am-6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nicole M. Barreca

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A handwritten signature in cursive script, appearing to read "Nicole Bane".

Examiner

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2/23/04